

REMARKS

Initially, Applicants respectfully acknowledge that the Examiner has indicated claims 1-8 and 10-16 are allowed.

Claims 1-16 remain pending in the application.

Reconsideration of the rejection and allowance of the pending application in view of the following remarks are respectfully requested.

In the Official Action of December 22, 2003, claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al., U.S. Patent No. 6,163,757 (hereinafter "Aizawa") in view of Yoon, U.S. Patent No. 6,272,387 ("Yoon"). This rejection is respectfully traversed.

Claim 9 of the present invention provides a wire harness designing method, which is used for designing a wire harness in which a single or a plurality of wires, each formed by coating a conductor line with an insulating layer, are bound and placed on a desired application subject. The method includes, inter alia, an application subject design planning step of planning a design of the application subject as a whole, a wire harness design planning step of planning a design of the wire harness so as to fit to the application subject, and a flexure life estimating step of estimating flexure life of the wire harness planned at the wire harness design planning step up to disconnection caused by extending and bending processes of the wire harness in accordance with a finite element method.

The flexure life estimating step includes an initial shape determining step of determining an initial shape of the wire harness, an extending and bending operation analyzing step of analyzing, extending and bending shapes of the wire harness so as to calculate a change in curvature of the wire harness, a calculation step of an amount of change in strain for calculating an amount of change in strain of the wire harness that is a subject for estimation based upon the change in curvature obtained through the extending and bending operation analyzing step, and a collation step of making a collation on a life estimation curve that is preliminarily set based upon the amount of change in strain calculated in the calculation step of an amount of change in strain so as to predict the flexure life of the wire harness.

Applicants respectfully submit that the cited references relied upon in the rejection under 35U.S.C. 103(a) do not disclose such a combination of features.

In the Official Action the Examiner has asserted “Aizawa et al. teaches a method of analyzing the life of a wire or cable comprising the steps of: planning a design of the subject (col. 1, lines 54-62), planning and designing a shape of the wiring (col. 2, lines 63-65), performing an extending and bending operation to calculate changes in curvature (col. 5, lines 45-57), performing calculations on the amount of change of strain (Fig.12, step 52), and performing a collation step so as to predict the life of the wiring (Fig. 13, step 62 and col. 16, lines 24-29).”

However, Applicants note that the Aizawa et al. patent reference does not disclose the features of calculating a change in curvature of the wire harness(claim 9, line 16-17), calculating an amount of change in strain (claim 9, lines 18-19) and predicting a flexure life of a wire harness (claim 9, lines 24-25), as recited in claim 9. Aizawa refers to and is concerned specifically with a method and an apparatus for calculating at least one of a displacement and a load produced in each portion of a linear object, when the linear object is deformed, the linear object having a cross-section which is substantially uniform along its length and having a length enough in comparison with the diameter, as represented by a wire constituting a wire rope, and a recording medium having a program for calculating the displacement stored thereon (see, column 1, lines 10-19). Aizawa simply simulate a flexure shape of a wire and displays it. Aizawa fails to disclose calculating a curvature. Although Aizawa calculates stress and strain at step 52 shown in Fig. 12, it does not calculate an amount of change in strain (see, column 5, lines 45-57). Moreover, Aizawa merely performs a process for displaying the stimulated result as an image at step 62 shown in Fig.13. Aizawa does not disclose the process of predicting life of a wire harness(see, column 16, lines 24-29).

Thus, the teachings of the Aizawa reference would not render the presently claimed invention unpatentable.

With regard to the Yoon reference, the Examiner has asserted that Yoon teaches a method of designing, manufacturing, and testing a wire harness. The Examiner has also asserted that, since Aizawa and Yoon both perform the testing of electrical wires, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Aizawa so that a bundle of wires are tested, as taught by Yoon so as to drive the benefit of a more versatile testing equipment. However, Yoon does not disclose the features of calculating curvature, calculating an amount of change in strain and predicting a life of a wire, as recited in claim 9.

Therefore, Yoon does not supply the deficiencies of Aizawa.

Thus, even assuming, arguendo, that the teachings of Aizawa and Yoon can be properly combined, the asserted combination of Aizawa and Yoon would not result in the invention as recited in claim 9. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 9 under 35USC103(a) and provide an early indication of the allowance thereof.

In the Official Action, the drawings have been objected because Figure 6 does not have a label indicating hole 7 disclosed on page 30, line 7 of the specification.

By the present Response, the drawings have been amended to place a reference numeral 7 indicating the hole therein. It is respectfully requested, therefore, that the objection to the drawings be withdrawn.

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Based on the above, it is respectfully submitted that this application is now in condition for allowance, and a Notice of Allowance is respectfully requested.

Should the Examiner have any questions or comments regarding this response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,  
Yuki KAWAKITA et al.

Will E. Lyndel Reg. No. 41,568  
Bruce H. Bernstein  
Reg. No. 29,027

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GREENBLUM & BERNSTEIN, P.L.C.  
1950 Roland Clarke Place  
Reston, VA 20191  
(703) 716-1191